

# SEQUENCE LISTING

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<120> BACTERIAL PHEROMONES AND USES THEREFOR

<130> 49946-60261

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<151> 1998-05-27

<160> 63

<170> PatentIn Ver. 3.3

<210> 1

<211> 362

<212> PRT

<213> Mycobacterium tuberculosis

<400> 1

Met Leu Arg Leu Val Val Gly Ala Leu Leu Leu Val Leu Ala Phe Ala  
1 5 10 15

Gly Gly Tyr Ala Val Ala Ala Cys Lys Thr Val Thr Leu Thr Val Asp  
20 25 30

Gly Thr Ala Met Arg Val Thr Thr Met Lys Ser Arg Val Ile Asp Ile  
35 40 45

Val Glu Glu Asn Gly Phe Ser Val Asp Asp Arg Asp Asp Leu Tyr Pro  
50 55 60

Ala Ala Gly Val Gln Val His Asp Ala Asp Thr Ile Val Leu Arg Arg  
65 70 75 80

Ser Arg Pro Leu Gln Ile Ser Leu Asp Gly His Asp Ala Lys Gln Val  
85 90 95

Trp Thr Thr Ala Ser Thr Val Asp Glu Ala Leu Ala Gln Leu Ala Met  
100 105 110

Thr Asp Thr Ala Pro Ala Ala Ala Ser Arg Ala Ser Arg Val Pro Leu  
115 120 125

Ser Gly Met Ala Leu Pro Val Val Ser Ala Lys Thr Val Gln Leu Asn  
 130 135 140  
 Asp Gly Gly Leu Val Arg Thr Val His Leu Pro Ala Pro Asn Val Ala  
 145 150 155 160  
 Gly Leu Leu Ser Ala Ala Gly Val Pro Leu Leu Gln Ser Asp His Val  
 165 170 175  
 Val Pro Ala Ala Thr Ala Pro Ile Val Glu Gly Met Gln Ile Gln Val  
 180 185 190  
 Thr Arg Asn Arg Ile Lys Lys Val Thr Glu Arg Leu Pro Leu Pro Pro  
 195 200 205  
 Asn Ala Arg Arg Val Glu Asp Pro Glu Met Asn Met Ser Arg Glu Val  
 210 215 220  
 Val Glu Asp Pro Gly Val Pro Gly Thr Gln Asp Val Thr Phe Ala Val  
 225 230 235 240  
 Ala Glu Val Asn Gly Val Glu Thr Gly Arg Leu Pro Val Ala Asn Val  
 245 250 255  
 Val Val Thr Pro Ala His Glu Ala Val Val Arg Val Gly Thr Lys Pro  
 260 265 270  
 Gly Thr Glu Val Pro Pro Val Ile Asp Gly Ser Ile Trp Asp Ala Ile  
 275 280 285  
 Ala Gly Cys Glu Ala Gly Gly Asn Trp Ala Ile Asn Thr Gly Asn Gly  
 290 295 300  
 Tyr Tyr Gly Gly Val Gln Phe Asp Gln Gly Thr Trp Glu Ala Asn Gly  
 305 310 315 320  
 Gly Leu Arg Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg Glu Glu Gln  
 325 330 335  
 Ile Ala Val Ala Glu Val Thr Arg Leu Arg Gln Gly Trp Gly Ala Trp  
 340 345 350  
 Pro Val Cys Ala Ala Arg Ala Gly Ala Arg  
 355 360

<210> 2  
 <211> 188  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 2  
 Met Pro Val Gly Trp Leu Trp Arg Ala Arg Thr Ala Lys Gly Thr Thr  
 1 5 10 15

Leu Lys Asn Ala Arg Thr Thr Leu Ile Ala Ala Ala Ile Ala Gly Thr



Val Ala Glu Arg Val Leu Ala Thr Gln Gly Ser Gly Ala Trp Pro Ala  
 100 105 110  
 Cys Gly His Gly Leu Ser Gly Pro Ser Leu Gln Glu Val Leu Pro Ala  
 115 120 125  
 Gly Met Gly Ala Pro Trp Ile Asn Gly Ala Pro Ala Pro Leu Ala Pro  
 130 135 140  
 Pro Pro Pro Ala Glu Pro Ala Pro Pro Gln Pro Pro Ala Asp Asn Phe  
 145 150 155 160  
 Pro Pro Thr Pro Gly Asp Val Pro Ser Pro Leu Ala Arg Pro  
 165 170

<210> 4  
 <211> 407  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 4  
 Met Ser Gly Arg His Arg Lys Pro Thr Thr Ser Asn Val Ser Val Ala  
 1 5 10 15  
 Lys Ile Ala Phe Thr Gly Ala Val Leu Gly Gly Gly Gly Ile Ala Met  
 20 25 30  
 Ala Ala Gln Ala Thr Ala Ala Thr Asp Gly Glu Trp Asp Gln Val Ala  
 35 40 45  
 Arg Cys Glu Ser Gly Gly Asn Trp Ser Ile Asn Thr Gly Asn Gly Tyr  
 50 55 60  
 Leu Gly Gly Leu Gln Phe Thr Gln Ser Thr Trp Ala Ala His Gly Gly  
 65 70 75 80  
 Gly Glu Phe Ala Pro Ser Ala Gln Leu Ala Ser Arg Glu Gln Gln Ile  
 85 90 95  
 Ala Val Gly Glu Arg Val Leu Ala Thr Gln Gly Arg Gly Ala Trp Pro  
 100 105 110  
 Val Cys Gly Arg Gly Leu Ser Asn Ala Thr Pro Arg Glu Val Leu Pro  
 115 120 125  
 Ala Ser Ala Ala Met Asp Ala Pro Leu Asp Ala Ala Ala Val Asn Gly  
 130 135 140  
 Glu Pro Ala Pro Leu Ala Pro Pro Pro Ala Asp Pro Ala Pro Pro Val  
 145 150 155 160  
 Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro  
 165 170 175  
 Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala  
 180 185 190

Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro  
 195 200 205  
 Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro  
 210 215 220  
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala  
 225 230 235 240  
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Val  
 245 250 255  
 Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro  
 260 265 270  
 Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu Ala Pro Ala Ser  
 275 280 285  
 Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro  
 290 295 300  
 Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Ala  
 305 310 315 320  
 Val Asn Glu Gln Thr Ala Pro Gly Asp Gln Pro Ala Thr Ala Pro Gly  
 325 330 335  
 Gly Pro Val Gly Leu Ala Thr Asp Leu Glu Leu Pro Glu Pro Asp Pro  
 340 345 350  
 Gln Pro Ala Asp Ala Pro Pro Pro Gly Asp Val Thr Glu Ala Pro Ala  
 355 360 365  
 Glu Thr Pro Gln Val Ser Asn Ile Ala Tyr Thr Lys Lys Leu Trp Gln  
 370 375 380  
 Ala Ile Arg Ala Gln Asp Val Cys Gly Asn Asp Ala Leu Asp Ser Leu  
 385 390 395 400  
 Ala Gln Pro Tyr Val Ile Gly  
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<210> 5

<211> 155

<212> PRT

<213> Mycobacterium leprae

<400> 5

Met Pro Gly Glu Met Leu Asp Val Arg Lys Leu Cys Lys Leu Phe Val  
 1 5 10 15

Lys Ser Ala Val Val Ser Gly Ile Val Thr Ala Ser Met Ala Leu Ser  
 20 25 30

Thr Ser Thr Gly Met Ala Asn Ala Val Pro Arg Glu Pro Asn Trp Asp

35	40	45
Ala Val Ala Gln Cys Glu Ser Gly Arg Asn Trp Arg Ala Asn Thr Gly		
50	55	60
Asn Gly Phe Tyr Gly Gly Leu Gln Phe Lys Pro Thr Ile Trp Ala Arg		
65	70	75
Tyr Gly Gly Val Gly Asn Pro Ala Gly Ala Ser Arg Glu Gln Gln Ile		
	85	90
Thr Val Ala Asn Arg Val Leu Ala Asp Gln Gly Leu Asp Ala Trp Pro		
	100	105
Lys Cys Gly Ala Ala Ser Asp Leu Pro Ile Thr Leu Trp Ser His Pro		
	115	120
Ala Gln Gly Val Lys Gln Ile Ile Asn Asp Ile Ile Gln Met Gly Asp		
	130	135
Thr Thr Leu Ala Ala Ile Ala Leu Asn Gly Leu		
145	150	155

<210> 6  
 <211> 176  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 6
Met His Pro Leu Pro Ala Asp His Gly Arg Ser Arg Cys Asn Arg His
1 5 10 15
Pro Ile Ser Pro Leu Ser Leu Ile Gly Asn Ile Ser Ala Thr Ser Gly
20 25 30
Asp Met Ser Ser Met Thr Arg Ile Ala Lys Pro Leu Ile Lys Ser Ala
35 40 45
Met Ala Ala Gly Leu Val Thr Ala Ser Met Ser Leu Ser Thr Ala Val
50 55 60
Ala His Ala Gly Pro Ser Pro Asn Trp Asp Ala Val Ala Gln Cys Glu
65 70 75 80
Ser Gly Gly Asn Trp Ala Ala Asn Thr Gly Asn Gly Lys Tyr Gly Gly
85 90 95
Leu Gln Phe Lys Pro Ala Thr Trp Ala Ala Phe Gly Gly Val Gly Asn
100 105 110
Pro Ala Ala Ala Ser Arg Glu Gln Gln Ile Ala Val Ala Asn Arg Val
115 120 125
Leu Ala Glu Gln Gly Leu Asp Ala Trp Pro Thr Cys Gly Ala Ala Ser
130 135 140

Gly Leu Pro Ile Ala Leu Trp Ser Lys Pro Ala Gln Gly Ile Lys Gln  
145 150 155 160

Ile Ile Asn Glu Ile Ile Trp Ala Gly Ile Gln Ala Ser Ile Pro Arg  
165 170 175

<210> 7

<211> 154

<212> PRT

<213> Mycobacterium tuberculosis

<400> 7

Met Thr Pro Gly Leu Leu Thr Thr Ala Gly Ala Gly Arg Pro Arg Asp  
1 5 10 15

Arg Cys Ala Arg Ile Val Cys Thr Val Phe Ile Glu Thr Ala Val Val  
20 25 30

Ala Thr Met Phe Val Ala Leu Leu Gly Leu Ser Thr Ile Ser Ser Lys  
35 40 45

Ala Asp Asp Ile Asp Trp Asp Ala Ile Ala Gln Cys Glu Ser Gly Gly  
50 55 60

Asn Trp Ala Ala Asn Thr Gly Asn Gly Leu Tyr Gly Gly Leu Gln Ile  
65 70 75 80

Ser Gln Ala Thr Trp Asp Ser Asn Gly Gly Val Gly Ser Pro Ala Ala  
85 90 95

Ala Ser Pro Gln Gln Gln Ile Glu Val Ala Asp Asn Ile Met Lys Thr  
100 105 110

Gln Gly Pro Gly Ala Trp Pro Lys Cys Ser Ser Cys Ser Gln Gly Asp  
115 120 125

Ala Pro Leu Gly Ser Leu Thr His Ile Leu Thr Phe Leu Ala Ala Glu  
130 135 140

Thr Gly Gly Cys Ser Gly Ser Arg Asp Asp  
145 150

<210> 8

<211> 99

<212> PRT

<213> Streptomyces coelicolor

<400> 8

Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala  
1 5 10 15

Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp





Asn Ile Glu Pro Ala Phe Gln Val Thr Val Asn Asp Ala Gly Lys Gln  
 180 185 190  
 Lys Lys Ile Trp Thr Thr Ser Thr Thr Val Ala Asp Phe Leu Lys Gln  
 195 200 205  
 Gln Lys Met Asn Ile Lys Asp Glu Asp Lys Ile Lys Pro Ala Leu Asp  
 210 215 220  
 Ala Lys Leu Thr Lys Gly Lys Ala Asp Ile Thr Ile Thr Arg Ile Glu  
 225 230 235 240  
 Lys Val Thr Asp Val Val Glu Glu Lys Ile Ala Phe Asp Val Lys Lys  
 245 250 255  
 Gln Glu Asp Ala Ser Leu Glu Lys Gly Lys Glu Lys Val Val Gln Lys  
 260 265 270  
 Gly Lys Glu Gly Lys Leu Lys Lys His Phe Glu Val Val Lys Glu Asn  
 275 280 285  
 Gly Lys Glu Val Ser Arg Glu Leu Val Lys Glu Glu Thr Ala Glu Gln  
 290 295 300  
 Ser Lys Asp Lys Val Ile Ala Val Gly Thr Lys Gln Ser Ser Pro Lys  
 305 310 315 320  
 Phe Glu Thr Val Ser Ala Ser Gly Asp Ser Lys Thr Val Val Ser Arg  
 325 330 335  
 Ser Asn Glu Ser Thr Gly Lys Val Met Thr Val Ser Ser Thr Ala Tyr  
 340 345 350  
 Thr Ala Ser Cys Ser Gly Cys Ser Gly His Thr Ala Thr Gly Val Asn  
 355 360 365  
 Leu Lys Asn Asn Pro Asn Ala Lys Val Ile Ala Val Asp Pro Asn Val  
 370 375 380  
 Ile Pro Leu Gly Ser Lys Val His Val Glu Gly Tyr Gly Tyr Ala Ile  
 385 390 395 400  
 Ile Ala Ala Asp Thr Gly Ser Ala Ile Lys Gly Asn Lys Ile Asp Val  
 405 410 415  
 Phe Phe Pro Ser Lys Ser Asp Ala Ser Asn Trp Gly Val Lys Thr Val  
 420 425 430  
 Ser Val Lys Val Leu Asn  
 435

<210> 10

<211> 288

<212> PRT

<213> Bacillus subtilis

<400> 10

Met Lys Lys Thr Ile Met Ser Phe Val Ala Val Ala Ala Leu Ser Thr  
1 5 10 15

Thr Ala Phe Gly Ala His Ala Ser Ala Lys Glu Ile Thr Val Gln Lys  
20 25 30

Gly Asp Thr Leu Trp Gly Ile Ser Gln Lys Asn Gly Val Asn Leu Lys  
35 40 45

Asp Leu Lys Glu Trp Asn Lys Leu Thr Ser Asp Lys Ile Ile Ala Gly  
50 55 60

Glu Lys Leu Thr Ile Ser Ser Glu Glu Thr Thr Thr Thr Gly Gln Tyr  
65 70 75 80

Thr Ile Lys Ala Gly Asp Thr Leu Ser Lys Ile Ala Gln Lys Phe Gly  
85 90 95

Thr Thr Val Asn Asn Leu Lys Val Trp Asn Asn Leu Ser Ser Asp Met  
100 105 110

Ile Tyr Ala Gly Ser Thr Leu Ser Val Lys Gly Gln Ala Thr Ala Ala  
115 120 125

Asn Thr Ala Thr Glu Asn Ala Gln Thr Asn Ala Pro Gln Ala Ala Pro  
130 135 140

Lys Gln Glu Ala Val Gln Lys Glu Gln Pro Lys Gln Glu Ala Val Gln  
145 150 155 160

Gln Gln Pro Lys Gln Glu Thr Lys Ala Glu Ala Glu Thr Ser Val Asn  
165 170 175

Thr Glu Glu Lys Ala Val Gln Ser Asn Thr Asn Asn Gln Glu Ala Ser  
180 185 190

Lys Glu Leu Thr Val Thr Ala Thr Ala Tyr Thr Ala Asn Asp Gly Gly  
195 200 205

Ile Ser Gly Val Thr Ala Thr Gly Ile Asp Leu Asn Lys Asn Pro Asn  
210 215 220

Ala Lys Val Ile Ala Val Asp Pro Asn Val Ile Pro Leu Gly Ser Lys  
225 230 235 240

Val Tyr Val Glu Gly Tyr Gly Glu Ala Thr Thr Ala Ala Asp Thr Gly  
245 250 255

Gly Ala Ile Lys Gly Asn Lys Ile Asp Val Phe Val Pro Glu Lys Ser  
260 265 270

Ser Ala Tyr Arg Trp Gly Asn Lys Thr Val Lys Ile Lys Ile Leu Asn  
275 280 285

<210> 11  
<211> 320  
<212> PRT  
<213> Clostridium acetobutylicum

<220>  
<221> MOD\_RES  
<222> (2)..(3)  
<223> Variable amino acid

<400> 11

Lys	Arg	Xaa	Xaa	Ala	Val	Ile	Leu	Met	Val	Ala	Val	Ile	Phe	Thr	Ile
1				5					10					15	
Ile	Ser	Ser	Met	Lys	Lys	Asn	Ile	Thr	Val	Asn	Ile	Asp	Gly	Lys	Thr
			20					25					30		
Ser	Lys	Ile	Ile	Thr	Tyr	Lys	Ser	Asn	Glu	Gly	Ser	Ile	Leu	Ser	Lys
		35					40					45			
Asn	Asn	Ile	Leu	Val	Gly	Pro	Lys	Asp	Lys	Ile	Gln	Pro	Ala	Leu	Asp
	50					55					60				
Thr	Asn	Leu	Lys	Asn	Gly	Asp	Lys	Ile	Tyr	Ile	Lys	Lys	Ala	Ile	Ser
65					70					75					80
Val	Glu	Val	Ala	Val	Asp	Gly	Lys	Val	Arg	Arg	Val	Lys	Ser	Ser	Glu
				85					90						95
Glu	Thr	Val	Ser	Lys	Met	Leu	Lys	Ala	Glu	Lys	Ile	Pro	Leu	Ser	Lys
			100					105					110		
Val	Asp	Lys	Val	Asn	Ile	Ser	Arg	Asn	Ala	Ala	Ile	Lys	Lys	Asn	Met
		115					120						125		
Lys	Ile	Ser	Ile	Thr	Arg	Val	Asn	Ser	Gln	Ile	Thr	Lys	Glu	Asn	Gln
	130						135					140			
Gln	Val	Asp	Phe	Pro	Thr	Glu	Val	Ile	Ser	Asp	Asp	Ser	Met	Gly	Asn
145					150					155					160
Asp	Glu	Lys	Gln	Val	Ile	Gln	Gln	Gly	Gln	Ala	Gly	Glu	Lys	Glu	Val
			165						170					175	
Phe	Thr	Lys	Ile	Val	Tyr	Glu	Asp	Gly	Lys	Ala	Val	Ser	Lys	Glu	Ile
			180					185					190		
Val	Gly	Glu	Val	Ile	Lys	Lys	Glu	Pro	Thr	Lys	Gln	Val	Phe	Lys	Val
		195					200						205		
Gly	Thr	Leu	Gly	Val	Leu	Lys	Pro	Asp	Arg	Gly	Gly	Arg	Val	Leu	Tyr
	210					215					220				
Lys	Lys	Ser	Leu	Gln	Val	Leu	Ala	Thr	Ala	Tyr	Thr	Asp	Asp	Phe	Ser
225					230					235					240

Phe Gly Ile Thr Ala Ser Gly Thr Lys Val Lys Arg Asp Ser Asp Gly  
                   245                                  250                                  255  
 Tyr Ser Ser Ile Ala Val Asp Pro Thr Val Ile Pro Leu Gly Thr Lys  
                   260                                  265                                  270  
 Leu Tyr Val Pro Gly Tyr Gly Tyr Gly Val Val Ala Glu Asp Thr Gly  
                   275                                  280                                  285  
 Gly Ala Ile Lys Gly Asn Arg Leu Asp Leu Phe Phe Thr Ser Glu Arg  
                   290                                  295                                  300  
 Glu Cys Tyr Asp Trp Gly Ala Lys Asn Val Thr Val Tyr Ile Leu Lys  
 305                                  310                                  315                                  320

<210> 12  
 <211> 81  
 <212> PRT  
 <213> Clostridium perfringens

<400> 12  
 Ala Glu Ala Tyr Thr Ala Ser Gly Met His Val Leu Arg Asp Pro Asn  
   1                                  5                                  10                                  15  
 Gly Tyr Ser Thr Ile Ala Val Asp Pro Ser Val Ile Pro Leu Gly Thr  
                   20                                  25                                  30  
 Lys Leu Tyr Val Glu Gly Tyr Gly Tyr Ala Ile Ile Ala Ala Asp Thr  
                   35                                  40                                  45  
 Gly Gly Ala Ile Lys Gly Asn Arg Val Asp Leu Phe Phe Asn Thr Glu  
                   50                                  55                                  60  
 Ala Glu Ala Ser Asn Trp Gly Val Arg Asn Leu Asp Val Tyr Ile Leu  
   65                                  70                                  75                                  80

Asn

<210> 13  
 <211> 51  
 <212> PRT  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: RP-factor  
           C-terminal domain peptide

<400> 13  
 Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu  
   1                                  5                                  10                                  15

Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly  
20 25 30

Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu Leu Val Leu  
35 40 45

Pro Gln Ala  
50

<210> 14

<211> 46

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 14

Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ser Arg Gln  
1 5 10 15

Tyr Asp Thr Thr Ile Ser Ala Leu Lys Ser Glu Asn Lys Leu Lys Ser  
20 25 30

Thr Val Leu Tyr Val Gly Gln Ser Leu Lys Val Pro Glu Ser  
35 40 45

<210> 15

<211> 44

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 15

Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ala Gln Thr  
1 5 10 15

Tyr Asn Thr Ser Val Ala Ala Leu Thr Ser Ala Asn His Leu Ser Thr  
20 25 30

Thr Val Leu Ser Ile Gly Gln Thr Leu Thr Ile Pro  
35 40

<210> 16

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 16

Thr Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Val Ile Ala Gln Lys  
1 5 10 15

Phe Asn Val Thr Ala Gln Gln Ile Arg Glu Lys Asn Asn Leu Lys Thr  
20 25 30

Asp Val Leu Gln Val Gly Gln Lys Leu Val Ile  
35 40

<210> 17

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 17

Lys Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Lys Ile Ala Asn Asn  
1 5 10 15

Ile Asn Leu Thr Val Gln Gln Ile Arg Asn Ile Asn Asn Leu Lys Ser  
20 25 30

Asp Val Leu Tyr Val Gly Gln Val Leu Lys Leu  
35 40

<210> 18

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 18

Thr Tyr Thr Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Ser Lys  
1 5 10 15

Tyr Gly Thr Ser Val Gln Asn Ile Met Ser Trp Asn Asn Leu Ser Ser  
20 25 30

Ser Ser Ile Tyr Val Gly Gln Val Leu Ala Val Lys Gln  
35 40 45

<210> 19

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 19

Thr His Ala Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Val Lys  
1 5 10 15

Tyr Gly Val Ser Val Gln Asp Ile Met Ser Trp Asn Asn Leu Ser Ser  
20 25 30

Ser Ser Ile Tyr Val Gly Gln Lys Leu Ala Ile Lys Gln  
35 40 45

<210> 20

<211> 46

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 20

Ser Val Lys Val Lys Ser Gly Asp Thr Leu Trp Ala Leu Ser Val Lys  
1 5 10 15

Tyr Lys Thr Ser Ile Ala Gln Leu Lys Ser Trp Asn His Leu Ser Ser  
20 25 30

Asp Thr Ile Tyr Ile Gly Gln Asn Leu Ile Val Ser Gln Ser  
35 40 45

<210> 21

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 21

Thr Tyr Thr Val Lys Ser Gly Asp Thr Leu Trp Gly Ile Ser Gln Arg  
1 5 10 15

Tyr Gly Ile Ser Val Ala Gln Ile Gln Ser Ala Asn Asn Leu Lys Ser  
20 25 30

Thr Ile Ile Tyr Ile Gly Gln Lys Leu Leu Leu  
35 40

<210> 22  
<211> 60  
<212> PRT  
<213> Unknown Organism

<220>  
<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 22  
Thr Tyr Thr Val Lys Lys Gly Asp Thr Leu Trp Asp Ile Ala Gly Arg  
1 5 10 15  
Phe Tyr Gly Asn Ser Thr Gln Trp Arg Lys Ile Trp Asn Ala Asn Lys  
20 25 30  
Thr Ala Met Ile Lys Arg Ser Lys Arg Asn Ile Arg Gln Pro Gly His  
35 40 45  
Trp Ile Phe Pro Gly Gln Lys Leu Lys Ile Pro Gln  
50 55 60

<210> 23  
<211> 60  
<212> PRT  
<213> Unknown Organism

<220>  
<223> Description of Unknown Organism: Hypothetical  
wall-associated protein fragment

<400> 23  
Thr Tyr Thr Val Lys Lys Gly Asp Thr Leu Trp Asp Leu Ala Gly Lys  
1 5 10 15  
Phe Tyr Gly Asp Ser Thr Lys Trp Arg Lys Ile Trp Lys Val Asn Lys  
20 25 30  
Lys Ala Met Ile Lys Arg Ser Lys Arg Asn Ile Arg Gln Pro Gly His  
35 40 45  
Trp Ile Phe Pro Gly Gln Lys Leu Lys Ile Pro Gln  
50 55 60

<210> 24  
<211> 167  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 24  
Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly  
1 5 10 15  
Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu  
20 25 30



Ala Pro Pro Ala Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val  
35 40 45

Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala  
50 55 60

Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu  
65 70 75 80

Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu  
85 90 95

Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly  
100 105 110

Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu  
115 120 125

Ala Pro Ala Ser Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala  
130 135 140

Pro Pro Ala Pro Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala  
145 150 155 160

Pro Pro Ala Ala Val Asn Glu  
165

<210> 25  
<211> 11  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 25  
Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu  
1 5 10

<210> 26  
<211> 11  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 26  
Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu  
1 5 10

<210> 27  
<211> 15  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 27  
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu  
1 5 10 15

<210> 28  
<211> 15  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 28  
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu  
1 5 10 15

<210> 29  
<211> 7  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 29  
Pro Ala Pro Pro Ala Asp Leu  
1 5

<210> 30  
<211> 8  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 30  
Ala Pro Pro Ala Pro Ala Asp Leu  
1 5

<210> 31  
<211> 8  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 31  
Ala Pro Pro Ala Pro Ala Asp Val  
1 5

<210> 32  
<211> 8  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 32  
Ala Pro Pro Ala Pro Ala Glu Leu  
1 5

<210> 33  
<211> 8  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 33

Ala Pro Pro Ala Pro Ala Glu Val  
1 5

<210> 34

<211> 478

<212> PRT

<213> *Listeria monocytogenes*

<400> 34

Met Asn Met Lys Lys Ala Thr Ile Ala Ala Thr Ala Gly Ile Ala Val  
1 5 10 15

Thr Ala Phe Ala Ala Pro Thr Ile Ala Ser Ala Ser Thr Val Val Val  
20 25 30

Glu Ala Gly Asp Thr Leu Trp Gly Ile Ala Gln Ser Lys Gly Thr Thr  
35 40 45

Val Asp Ala Ile Lys Lys Ala Asn Asn Leu Thr Thr Asp Lys Ile Val  
50 55 60

Pro Gly Gln Lys Leu Gln Val Asn Asn Glu Val Ala Ala Ala Glu Lys  
65 70 75 80

Thr Glu Lys Ser Val Ser Ala Thr Trp Leu Asn Val Arg Thr Gly Ala  
85 90 95

Gly Val Asp Asn Ser Ile Ile Thr Ser Ile Lys Gly Gly Thr Lys Val  
100 105 110

Thr Val Glu Thr Thr Glu Ser Asn Gly Trp His Lys Ile Thr Tyr Asn  
115 120 125

Asp Gly Lys Thr Gly Phe Val Asn Gly Lys Tyr Leu Thr Asp Lys Ala  
130 135 140

Val Ser Thr Pro Val Ala Pro Thr Gln Glu Val Lys Lys Glu Thr Thr  
145 150 155 160

Thr Gln Gln Ala Ala Pro Val Ala Glu Thr Lys Thr Glu Val Lys Gln  
165 170 175

Thr Thr Gln Ala Thr Thr Pro Ala Pro Lys Val Ala Glu Thr Lys Glu  
180 185 190

Thr Pro Val Ile Asp Gln Asn Ala Thr Thr His Ala Val Lys Ser Gly  
195 200 205

Asp Thr Ile Trp Ala Leu Ser Val Lys Tyr Gly Val Ser Val Gln Asp  
210 215 220

Ile Met Ser Trp Asn Asn Leu Ser Ser Ser Ser Ile Tyr Val Gly Gln  
225 230 235 240

Lys Leu Ala Ile Lys Gln Thr Ala Asn Thr Ala Thr Pro Lys Ala Glu

245	250	255
Val Lys Thr Glu Ala Pro Ala Ala Glu Lys Gln Ala Ala Pro Val Val		
260	265	270
Lys Glu Asn Thr Asn Thr Asn Thr Ala Thr Thr Glu Lys Lys Glu Thr		
275	280	285
Ala Thr Gln Gln Gln Thr Ala Pro Lys Ala Pro Thr Glu Ala Ala Lys		
290	295	300
Pro Ala Pro Ala Pro Ser Thr Asn Thr Asn Ala Asn Lys Thr Asn Thr		
305	310	315
Asn Thr Asn Thr Asn Asn Thr Asn Thr Pro Ser Lys Asn Thr Asn Thr		
325	330	335
Asn Ser Asn Thr Asn Thr Asn Thr Asn Ser Asn Thr Asn Ala Asn Gln		
340	345	350
Gly Ser Ser Asn Asn Asn Ser Asn Ser Ser Ala Ser Ala Ile Ile Ala		
355	360	365
Glu Ala Gln Lys His Leu Gly Lys Ala Tyr Ser Trp Gly Gly Asn Gly		
370	375	380
Pro Thr Thr Phe Asp Cys Ser Gly Tyr Thr Lys Tyr Val Phe Ala Lys		
385	390	395
Ala Gly Ile Ser Leu Pro Arg Thr Ser Gly Ala Gln Tyr Ala Ser Thr		
405	410	415
Thr Arg Ile Ser Glu Ser Gln Ala Lys Pro Gly Asp Leu Val Phe Phe		
420	425	430
Asp Tyr Gly Ser Gly Ile Ser His Val Gly Ile Tyr Val Gly Asn Gly		
435	440	445
Gln Met Ile Asn Ala Gln Asp Asn Gly Val Lys Tyr Asp Asn Ile His		
450	455	460
Gly Ser Gly Trp Gly Lys Tyr Leu Val Gly Phe Gly Arg Val		
465	470	475

<210> 35  
 <211> 758  
 <212> DNA  
 <213> Micrococcus luteus

<220>  
 <221> CDS  
 <222> (66)..(728)

<400> 35  
 accaaggaga aggcacgaccc cgggtgtgcct cggccgccga tcagcgagga ctgcgcatgg 60

acacc atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc	110
Met Thr Leu Phe Thr Ser Ala Thr Arg Ser Arg Ala Thr	
1 5 10 15	
gcc tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc	158
Ala Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly	
20 25 30	
ttc tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc	206
Phe Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu	
35 40 45	
gcc gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc	254
Ala Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly	
50 55 60	
ttc tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc	302
Phe Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly	
65 70 75	
ggc gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc	350
Gly Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg	
80 85 90 95	
gcc gag atc ctc cag gac ctg cag gcc tgg ggc gcg tgg ccg ctg tgc	398
Ala Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys	
100 105 110	
tcg cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg	446
Ser Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val	
115 120 125	
gac gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg	494
Asp Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val	
130 135 140	
cag cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc	542
Gln Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala	
145 150 155	
gcg gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc	590
Ala Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser	
160 165 170 175	
ggg gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc	638
Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly	
180 185 190	
tgg acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc	686
Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala	
195 200 205	
gtg atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga	728
Val Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala	
210 215 220	
gacgcctgac cggccccccg gaccggtacc	758

<210> 36  
<211> 220  
<212> PRT  
<213> Micrococcus luteus

<400> 36  
Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala  
1 5 10 15  
Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe  
20 25 30  
Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala  
35 40 45  
Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe  
50 55 60  
Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly  
65 70 75 80  
Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala  
85 90 95  
Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser  
100 105 110  
Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp  
115 120 125  
Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln  
130 135 140  
Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala  
145 150 155 160  
Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly  
165 170 175  
Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp  
180 185 190  
Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val  
195 200 205  
Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala  
210 215 220

<210> 37  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<400> 37

gcsacsgtsg acacstggga ccgsctsgcs gag

33

<210> 38

<211> 19

<212> PRT

<213> Micrococcus luteus

<220>

<221> MOD\_RES

<222> (13)

<223> Variable amino acid

<220>

<221> MOD\_RES

<222> (18)

<223> Variable amino acid

<400> 38

Ala	Thr	Val	Asp	Thr	Trp	Asp	Arg	Leu	Ala	Glu	Glu	Xaa	Ser	Asn	Gly
1				5				10						15	

Thr Xaa Asp

<210> 39

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<400> 39

ccgccgtaga agccgttg

18

<210> 40

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<400> 40

agttcaccct gtcctcctg

19

<210> 41  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<220>  
<221> modified\_base  
<222> (9)  
<223> i

<220>  
<221> modified\_base  
<222> (15)  
<223> i

<220>  
<221> modified\_base  
<222> (21)  
<223> i

<400> 41  
gcytgrtgng grtancctc ncc

23

<210> 42  
<211> 12  
<212> PRT  
<213> Micrococcus luteus

<400> 42  
Val Gly Gly Glu Gly Tyr Pro His Gln Ala Ser Lys  
1 5 10

<210> 43  
<211> 182  
<212> PRT  
<213> Micrococcus luteus

<400> 43  
Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Cys Glu Ser Asn Gly  
1 5 10 15

Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe Tyr Gly Gly Val Gln Phe  
20 25 30

Thr Leu Ser Ser Trp Gln Ala Val Gly Gly Glu Gly Tyr Pro His Gln  
35 40 45

Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala Glu Ile Leu Gln Asp Leu  
50 55 60



Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser Gln Lys Leu Gly Leu Thr  
 65 70 75 80  
 Gln Ala Asp Ala Asp Ala Gly Asp Val Asp Ala Thr Glu Ala Ala Pro  
 85 90 95  
 Val Ala Val Glu Arg Thr Ala Thr Val Gln Arg Gln Ser Ala Ala Asp  
 100 105 110  
 Glu Ala Ala Ala Glu Gln Ala Ala Ala Glu Gln Ala Val Val Ala  
 115 120 125  
 Glu Ala Glu Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu  
 130 135 140  
 Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala  
 145 150 155 160  
 Asn Lys Gly Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu  
 165 170 175  
 Leu Val Leu Pro Gln Ala  
 180

<210> 44  
 <211> 299  
 <212> DNA  
 <213> Streptomyces coelicolor

<220>  
 <221> CDS  
 <222> (3)..(299)

<400> 44  
 gg atc cgc acc gcc gcg gta acc ctg gtc gcc gcg acc gca ctc ggg 47  
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly  
 1 5 10 15  
 gcg acc ggc gaa gcg gtg gcc gcg ccc tgc gcg ccc ctg cgc acc gac 95  
 Ala Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp  
 20 25 30  
 tgg gac gcc atc gcc gcg tgc gag tcc agc ggc aac tgg cag gcg aac 143  
 Trp Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn  
 35 40 45  
 acc ggc aac ggc tac tac ggc ggc ctg cag ttc gca cgg tcc agc tgg 191  
 Thr Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp  
 50 55 60  
 atc gcc gcc ggc ggc ctc aag tac gcc ccg cgc gcg gac ctc gcc acc 239  
 Ile Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr  
 65 70 75  
 cgc ggc gag cag atc gcc gtg gcg gaa cgc ctc gcc cgt ctg cag ggg 287  
 Arg Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly

80	85	90	95	
atg tcc gcc tgg				299
Met Ser Ala Trp				

<210> 45  
 <211> 99  
 <212> PRT  
 <213> Streptomyces coelicolor

<400> 45  
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala  
 1 5 10 15  
 Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp  
 20 25 30  
 Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn Thr  
 35 40 45  
 Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp Ile  
 50 55 60  
 Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg  
 65 70 75 80  
 Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly Met  
 85 90 95  
 Ser Ala Trp

<210> 46  
 <211> 34  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 46	
gtcagaattc atatggccac cgtggacacc tggg	34

<210> 47  
 <211> 33  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 47	
tgacggatcc tattaggcct gcggcaggac gag	33

<210> 48  
<211> 35  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 48  
atcagaattc atatggacga catcgattgg gacgc 35

<210> 49  
<211> 29  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 49  
cgcaggatcc cctcaatcgt ccctgctcc 29

<210> 50  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 50  
gaagagaatt ccttccatca cga 23

<210> 51  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 51  
ccaaacgaat tcggtcaatc ac 22

<210> 52  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 52  
gcaaggatcc cagactaaaa aaacag 26

<210> 53  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 53  
atcaggatcc atattattag tttaaga 27

<210> 54  
<211> 663  
<212> DNA  
<213> Micrococcus luteus

<220>  
<221> CDS  
<222> (1)..(663)

<400> 54  
atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc gcc 48  
Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala  
1 5 10 15  
tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc ttc 96  
Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe  
20 25 30  
tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc gcc 144  
Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala  
35 40 45  
gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc ttc 192  
Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe  
50 55 60  
tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc ggc 240  
Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly  
65 70 75 80  
gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc gcc 288  
Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala  
85 90 95  
gag atc ctc cag gac ctg cag ggc tgg ggc gcg tgg ccg ctg tgc tcg 336  
Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser  
100 105 110  
cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg gac 384  
Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp

115	120	125	
gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg cag			432
Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln			
130	135	140	
cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc gcg			480
Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala			
145	150	155	160
gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc ggt			528
Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly			
165	170	175	
gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc tgg			576
Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp			
180	185	190	
acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc gtg			624
Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val			
195	200	205	
atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga			663
Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala			
210	215	220	

<210> 55  
 <211> 6  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 55  
 Ala Pro Pro Ala Asp Leu  
 1 5

<210> 56  
 <211> 7  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 56  
 Ala Pro Ala Ser Ala Asp Leu  
 1 5

<210> 57  
 <211> 8  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 57  
 Ala Pro Pro Ala Pro Ala Glu Leu  
 1 5

<210> 58  
<211> 4  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 58  
Ala Pro Pro Ala  
1

<210> 59  
<211> 4  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 59  
Ala Val Asn Glu  
1

<210> 60  
<211> 15  
<212> PRT  
<213> Mycobacterium tuberculosis

<220>  
<221> MOD\_RES  
<222> (14)  
<223> Asp or Glu

<400> 60  
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Xaa Leu  
1 5 10 15

<210> 61  
<211> 8  
<212> PRT  
<213> Mycobacterium tuberculosis

<220>  
<221> MOD\_RES  
<222> (7)  
<223> Asp or Glu

<220>  
<221> MOD\_RES  
<222> (8)  
<223> Leu or Val

<400> 61  
Ala Pro Pro Ala Pro Ala Xaa Xaa  
1 5

<210> 62  
<211> 11  
<212> PRT  
<213> Mycobacterium tuberculosis

<220>  
<221> MOD\_RES  
<222> (8)  
<223> Ala or Val

<400> 62  
Ala Pro Pro Val Glu Leu Ala Xaa Asn Asp Leu  
1 5 10

<210> 63  
<211> 14  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 63  
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp  
1 5 10

<210> 62  
<211> 11  
<212> PRT  
<213> Mycobacterium tuberculosis

<220>  
<221> MOD\_RES  
<222> (8)  
<223> Ala or Val

<400> 62  
Ala Pro Pro Val Glu Leu Ala Xaa Asn Asp Leu  
1 5 10

<210> 63  
<211> 14  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 63  
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp  
1 5 10